SYMONS'S

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CLIMATOLOGICAL RETURNS FROM JAPAN.*

THE first of the two works of which the titles are given below is wholly lithographed, the text being in parallel columns in Japanese and English. It is essentially an epitome of the daily weather maps issued by the Imperial observatory, and gives for each month maps of the tracks of low pressure and of high pressure centres, critical analyses of the forecasts issued by the observatory, and a list of gales reported from the Japanese lighthouses. It also contains an abstract of the observations at each of twenty-four stations for each month, and two maps for each month, one showing the distribution of pressure, temperature and wind, and the other that of rain. Finally, we have an abstract table for the year 1884, and two maps, one giving the isobars and isotherms for the year, and the other the total rainfall, which varied from 27·05 in. at Nemuro in the extreme N.E., to 109·80 in. at Kanazawa, near the centre of the mainland. The average fall at 25 stations fairly distributed over Japan was 63·98 in.

The second work is printed also in Japanese and English, and contains abstracts of the observations for the three years, 1883—85, from 27 stations well distributed over the country, and reaching from Nagasaki and Kagoshima in the S.W. to Nemuro in the extreme N.E., an area which may be roughly paralleled by one reaching from Madeira to Bordeaux.

The book consists almost wholly of tables, but considerable insight to the stations and arrangements may be obtained through these tables, *e.g.*, the majority of the barometers are at an elevation above mean sea level of less than 50 ft., and only, two, Kioto (161 ft.) and Nagasaki (189 ft.), exceed 150 ft. The thermometers are placed very uniformly, all being within twelve inches of 4 ft. above the ground, and most of them absolutely at that height. The rain gauges vary rather more ; the lowest is 7 in. and the highest 4 ft. 3 in. above the

* *Monthly Summaries and Monthly Means for the year 1884.* – 4to., 47 pages, 41 maps. Imperial Meteorological Observatory, Tokio, Japan, 1885.

Monthly and Yearly Means, Extremes and Sums for the Years 1883, 1884, and 1885. Published by the Imperial Meteorological Observatory, Tokio, Japan. 4to, 86 pages [Tokio, 1886].

ground. A column gives the date of establishment of each station, and from this we find that the oldest is that of Hakodate, which was started in July, 1872, Tokio was next in June, 1875, then Sapporo in September, 1876, and Nagasaki in July, 1878. There must, therefore, be some important mean values available, and we hope that ere long we shall receive an epitome of yearly abstracts for each station back to its very establishment.

It is, of course, impossible for us to give a tithe of the information contained in the volume, but we append a table which contains the most important facts for each station of which the record is perfect for the three years. We may mention that all values in the original are given in metric units and in centigrade degrees, but we have converted them all into English measures. We must call the attention of the director to one respect in which his tables are very irregular. He gives various extreme values, *e.g.*, the highest temperature in each month, and at the foot of the table he sometimes gives the absolute max. and sometimes the mean of all the max.; this is very apt to lead to error—the first is the correct value, and should have been alone given. The volume, of course, contains much information which we cannot here extract, but we may especially mention full details of the motion of cirri.

Years.	Mean Pressure 32° & S L. in	Temperature. Mean. °	Absolute Max. °	Absolute Min. °	Humidity Mean.	Cloud Mean. 0—10	Rain Total. in.	Max. in 24 hrs. in.	Days.
Nagasaki, *Lat.* N. 32° 44′, *Lon.* E. 129° 52′.									
1883 ...	30·022	60·3	94·3	25·0	76	5·9	69·02	6·73	160
1884 ...	30·030	58·8	93 6	23·4	77	5·9	79·16	5·52	179
1885 ...	30·023	59·5	92·1	25·5	77	6·1	99·56	5·69	177
Kagoshima, *Lat.* N. 31° 35′, *Lon.* E. 130° 33′.									
1883 ...	30·021	62·1	92·8	22·8	76	6·1	80·69	5·44	167
1884 ...	30 033	60·6	94·6	23·2	78	6·0	75 63	3·94	166
1885 ...	30·029	61·2	91·9	23·4	78	5·9	86 22	4·42	164
Mivasaki, *Lat.* N. 31° 56′ *Lon.* E. 131° 26′.									
1883 ...	30·021	60·8	93·2	21·0	80	5·8	88·43	3·70	148
1884 ...	30·029	59·9	95·2	21·0	79	5·5	83·71	3·59	154
1885 ...	30·025	60·8	96·3	22·1	80	5·3	106·93	5·75	137
Kochi, *Lat.* N. 33° 33′, *Lon.* E. 133° 34′.									
1883 ...	30·007	59·9	88·9	24·3	76	5·7	82·98	6·37	133
1884 ...	30·015	58 6	91·8	24·3	78	5·4	82·21	6·66	148
1885 ...	30·007	59·5	90·9	24·6	77	5 6	99·91	5·24	138
Wakayama, *Lat.* N. 34° 14′, *Lon.* E. 135° 9′.									
1883 ...	29·997	58·8	97·9	22·3	73	6·4	46·89	5·12	134
1884 ...	30·005	57·6	92·5	24·8	73	6·3	54·48	3·98	149
1885 ...	29·993	58·6	92·5	24·4	74	6·2	67·39	5·09	147
Osaka, *Lat.* N. 34° 42′, *Lon.* E. 135° 30′.									
1883 ...	30 009	57·7	96·1	22·3	76	6·4	42·05	3·65	111
1884 ...	30·017	56·3	93·2	21·0	77	6·2	56·73	5·18	132
1885 ...	30·004	57·9	94·6	23·2	76	6·2	63·09	4·43	145

Years.	Mean Pressure. 32° & S.L. in.	Temperature. Mean. °	Absolute Max. °	Absolute Min. °	Humidity Mean.	Cloud Mean. 0—10	Rain Total. in.	Max. in 24 hrs. in.	Days.
Kioto, *Lat.* N. 35° 1′, *Lon.* E. 135° 46′.									
1883	30·005	56·3	97·2	20·1	76	6·8	45·34	3·40	146
1884	30·009	55·2	93·0	15·4	78	7·0	62·38	3·84	157
1885	30·005	56·1	92·1	15·8	77	6·9	71·14	4·10	174
Shimonoseki, *Lat.* N. 33° 58′, *Lon.* E. 130° 57′.									
1883	30·028	58·6	96·4	24·1	77	6·2	58·12	3·92	163
1884	30·032	57·2	91·6	26·8	78	6·5	66·55	3·74	163
1885	30·024	57·9	90·9	27·5	77	6·1	73·60	3·43	179
Sakai, *Lat.* N. 35° 31′, *Lon.* E. 133° 13′.									
1883	30·010	57·0	94·6	23·7	77	6·9	60·91	3·08	205
1884	30·010	55·2	92·8	23·0	79	7·4	79·00	3·03	227
1885	30·006	56·3	93·0	18·0	78	7·4	86·03	4·02	223
Kanazawa, *Lat.* N. 36° 33′, *Lon.* E. 136° 40′.									
1883	30·005	54·7	92·5	20·5	79	7·6	94·15	2·85	215
1884	30·005	53·6	94·8	21·0	79	7·9	109·83	2·52	236
1885	29·997	54·3	93·9	18·7	80	7·6	129·96	3·56	237
Gifu, *Lat.* N. 35° 27′, *Lon.* E 136° 46′.									
1883	30·001	56·7	96·4	18·0	79	6·2	59·74	4·85	132
1884	30·009	55·4	93·0	10·9	81	6·1	75·28	5·62	148
1885	30·005	56·3	91·6	14·2	80	6·6	95·04	5·91	158
Hamamatsu, *Lat.* N. 34° 43′, *Lon.* E. 137° 43′.									
1883	29·980	58·6	97·3	22·8	75	5·0	58·32	2·76	128
1884	29·967	57·0	94·5	25·0	76	5·0	65·24	4·92	121
1885	29·963	57·6	92·5	22·6	75	5·2	90·90	4·55	148
Numazu, *Lat.* N. 35° 6′, *Lon.* E. 138° 51′.									
1883	29·965	57·7	89·6	17·8	75	6·8	58·43	2·55	130
1884	29·961	57·0	94·5	25·0	76	5·0	72·78	7·19	140
1885	29·957	57·7	89·8	16·3	76	6·3	88·51	6·61	146
Tokio, *Lat.* N. 35° 41′, *Lon.* E. 139° 45′.									
1883	29·973	55·6	91·2	18·0	77	5·9	56·09	3·48	141
1884	29·969	54·9	92·1	18·3	76	5·8	51·74	3·23	125
1885	29·969	55·4	89·1	15·6	77	5·9	60·54	5·99	146
Niigata, *Lat.* N. 37° 55′, *Lon.* E. 139° 3′.									
1883	29·979	54·1	92·7	21·2	78	7·7	70·48	2·84	223
1884	29·975	53·1	95·4	15·6	79	7·6	71·87	2·19	242
1885	29·969	53·8	94·8	19·0	78	7·4	76·02	3·19	241
Akita, *Lat.* N. 39° 42′, *Lon.* E. 140° 7′.									
1883	29·973	50·0	93·0	0·7	83	7·7	60·43	2·72	201
1884	29·961	49·3	91·2	4·5	84	8·1	65·56	2·59	232
1885	29·953	50·5	95·0	3·4	80	7·8	70·44	2·71	234
Aomori, *Lat.* N. 40° 51′, *Lon.* E. 140° 45′.									
1883	29·949	47·1	89·8	—1·1	79	7·0	39·29	1·83	193
1884	29·933	46·2	92·1	0·7	79	7·2	51·82	3·43	225
1885	29·929	47·5	90·9	2·1	79	7·0	43·01	1·85	219
Hakodate, *Lat.* N. 41° 46′, *Lon.* E. 140° 44′.									
1883	29·949	45·5	89·1	—0·6	84	6·5	31·41	1·71	129
1884	29·929	44·6	84·0	1·9	82	6·9	43·19	2·37	166
1885	29·917	46·2	82·9	—1·7	82	6·8	47·24	2·60	154

THE SONNBLICK OBSERVATORY.

THE highest meteorological station in the world is that on Pike's Peak, Colorado, which is situated at an altitude of 14,134 feet; the highest in Europe is now being erected on the Sonnblick, one of the heights of that portion of the Tyrolese Alps, the highest summits of which are the Grossglockner, the Wiesbachhorn, and the Hohe Narr. The Sonnblick (sun glance) is a mountain 10,170 feet high. Its summit is less difficult of access than those of some of its neighbours, and its suitableness for the erection of an observatory was first pointed out to meteorologists by Herr Rojacher, a gentleman owning the Rauriser Goldberg, whose private residence and mines are situate on the slopes of the Sonnblick at a height of over 5,000 ft. From this spot a wire rope way, used chiefly for the purposes of the mines, but also practicable for passengers, leads up to a height of nearly 8,000 ft. Here a house has been erected for about twenty miners, who reside there also during winter. Thence the summit of the Sonnblick is reached by an easy ascent over a glacier in three hours. The descent over this glacier may be made in low sledges in fifteen minutes.

The Sonnblick rises from the Rauris valley like a precipitous wall 3,000 ft. high, and the observatory now being erected on the summit, will consist of a blockhouse, flanked by a massive stone turret 40 ft. high. To guard against the frightful storms raging round the summit, the walls of the tower have been made of an enormous thickness, and the blockhouse is strengthened by being anchored to the rock by steel wire cables. Wood has been chosen for the construction of the house because it keeps out cold better than stone, the cold being most intense in mid-winter in that exposed position.

The house contains two living rooms—one for the resident observer, the other for such scientific men as may ascend during favourable weather with a view of carrying on their experiments. The walls of the house are panelled inside with wood, and covered neatly outside by wood shingles. The tower—the observatory proper—will be fitted with all the instruments used in meteorological science. As there is great danger to the building from the terrific thunderstorms which rage round the summit, the observatory is protected not only by three lightning rods, but also by a lightning-proof fencing. The solitary resident observer who has chosen to exile himself from civilisation for the best part of the year is one of the miners, who is now undergoing a course of instruction in meteorology. But he will not be cut off entirely from intercourse with his kindred, for he will be able to keep up communication by telephone with the miners' house 2,000 ft. below him, whence another telephone wire, 15 miles long, leads to Rauris. From the latter place, his daily record of observations will be telegraphed to Vienna and the scientific world generally.

It will be of interest to give, in the order of their altitude, a list of some existing high level stations re-arranged and corrected from one given by Dr. Breitenlohner, the director of the Sonnblick Observatory :—

14,134	ft.	Pike's Peak, Colorado, America.
10,170	,,	Sonnblick, Salzburgh, Austria.
9,512	,,	Etna, Sicily.
9,380	,,	Pic du Midi, Pyrenees, France.
8,360	,,	Valdobbia, Piedmont, Italy.
8,343	,,	Stelvio, Rhœtian Alps, Italy.
8,200	,,	Säntis, Appenzell, Switzerland.
7,091	,,	Monte Simone, Appenines, Italy.
7,087	,,	Little St. Bernard, Italy.
6,706	,,	Obirgipfel, Carinthia, Austria.
6,279	,,	Mount Washington, New Hampshire, America.
6,234	,,	Mont Ventoux, Cottian Alps, France.
6,100	,,	Wendelstein, South Bavaria.
5,827	,,	Schafburg, Ischl, Austria.
5,246	,,	Schneekoppe, Silesia, Germany.
5,139	,,	Pic de l'Aiglon, Cevennes, France.
4,823	,,	Puy de Dôme, Auvergne, France.
4,705	,,	Mont Pilat, Cevennes, France.
4,406	,,	Ben Nevis, Inverness, Scotland.
4,265	,,	Vesuvius, Naples, Italy.
4,259	,,	Briançon, Hautes Alpes, France.
3,990	,,	Ballon de Servance, Vosges, France.
3,747	,,	Brocken, Saxony.

The cost of the erection of the Sonnblick Observatory is, like that of most of the mountain observatories, to be defrayed chiefly by subscriptions, and the circular inviting such aid bears four signatures, which we reproduce, as they are sure to command respect and we hope support.

DR. JOS. RITTER v. LORENZ-LIBURNAU, k. k. Ministerialrath, *als Präsident.*

PROF. DR. FR. SIMONY, k. k. Hofrath, *als Vice-Präsident.*

PROF. DR. JULIUS HANN, Director der k. k. Centralanstalt für Meteorologie, *als I. Secretär.*

DR. STAN. KOSTLIVÝ, Adjunct der k. k. Centralanstalt für Meteorologie, *als II. Secretär und Cassier,* 38, Hohe Warte, Vienna.

We have never been strong advocates of mountain observatories, because we have waited for evidence upon two points : (1) We want to see how the records are going to be utilized ; (2) We want to know how the directors are going to overcome the difficulty which arises from the formation of hoar frost on the instruments.

We yield to no one in admiration of the courage and devotion of the observers up above the snow line, and shall be delighted to be convinced of the practical importance of their work. If Mr. Gaster would say that the Ben Nevis observations are of more use than would be a regular record from St. Kilda ; or if M. Fron would state that the absence of the records from the Puy de Dôme and the Pic du Midi would seriously diminish the accuracy of his forecasts for France, we should be most happy to insert their statements and accept their verdict.

There seem, however, to be several reasons why this Sonnblick Observatory merits special support: (1) If mere altitude is any recommendation, it has the merit of being the highest in Europe; (2) it is already built, and funds for its equipment and maintenance are alone required; (3) its central position will probably cause its records to be less interrupted by hoar frost than some other stations at a less altitude; (4) and chiefly, because the application bears the signature of Dr. Hann, and we know of no one so likely to thoroughly work up the records and to demonstrate the utility of mountain stations, or to show that they are merely "extremely interesting."

TEMPERATURE OBSERVATIONS ON LINCOLN CATHEDRAL.

By permission of the Dean and Chapter of Lincoln, the Council of the Royal Meteorological Society have recently made arrangements for a series of well-conducted observations to be carried on at Lincoln Cathedral to throw light on the vertical decrement of the temperature of the air. The great tower of the cathedral affords a good opportunity for carrying out these observations, as it rises to a height of about 300ft. above the ground, and of 500ft. above sea level. The instrument used for showing the temperature on the tower is one of the late Sir W. Siemens's electrical thermometers, which is placed on the N.W. side of the S.E. pinnacle. This electrical thermometer consists of a coil of wire wound round a cylindrical piece of wood inclosed in a small brass tube; a third wire is joined to one of the wires, and the three, insulated by gutta percha, form a light cable, which is brought down to one of the vestries of the cathedral and connected to a galvanometer, the terminals of which are in connection with the two poles of a six-cell Leclanché galvanic battery. The instrument is read by depressing a key, which causes the needle of the galvanometer to deflect; a pointer or vernier (moving a contact roller upon a wire in a circular groove) is then pushed to the right or to the left upon a divided scale until the needle remains stationary on the zero point, when the electrical resistance of the wire is measured upon the scale. The number indicated by the vernier is then read off, and by referring to a table of equivalents, the actual temperature in degrees of Fahr. is readily ascertained. A Stevenson thermometer screen with dry, wet, maximum, and minimum thermometers has also been placed in Mr. Mantle's garden, Northgate, for comparison with the electrical thermometer on the tower. All the instruments are under the care of Mr. Mantle, who will make frequent simultaneous observations during the day. The results of these experiments will be of great value in determining the variations of the temperature of the air at an altitude of 300ft. above the ground.

ROYAL METEOROLOGICAL SOCIETY.

THE concluding meeting of this Society for the present session was held on Wednesday evening, June 16th, at the Institution of Civil Engineers, 25, Great George Street, Mr. W. Ellis, F.R.A.S., President, in the chair. The Rev. J. R. Boyle and Mr. H. B. de la Poer Wall, M.A., were elected Fellows of the Society.

The following papers were read:—1, "Note on a Sudden Squall, January 13th, 1886," by Mr. R. H. Scott, F.R.S. This was an account of a remarkably sudden squall of about ten minutes' duration which passed over the south of England on the morning of January 13th. It was first recorded at Falmouth at 8.20 a.m. and passed over London at 10.40 a.m.

2. "The Floods of May, 1886," by Mr. F. Gaster, F.R.Met.Soc., and Mr. W. Marriott, F.R.Met.Soc. The month of May, 1886, will long be remembered for the heavy rains that occurred between the 11th and 13th, and the floods they produced over the greater part of the western and midland counties of England. In fact at Worcester the flood was higher than any that has occurred there since 1770. On the 11th and 12th heavy rain fell over the east of Ireland, there being over 3 in. during those two days at several places in Counties Down, Dublin, and Wexford; the greatest reported being 3·52 in. at Kilkeel, County Down. Over the other parts of the United Kingdom the rainfall on the 11th was under 1 in. Rain, however, commenced falling about noon on the 11th over the midland counties, and continued with increasing intensity till the morning of the 14th; the duration at most places being about sixty hours. The heaviest rainfall occurred in Shropshire, where over 6 in. fell at several stations, while at Burwarton as much as 7·09 in. was recorded; the amounts for each day being—0·60 in. on the 11th, 3·10 in. on the 12th, and 3·39 in. on the 13th. Very serious floods followed these heavy rains. At Shrewsbury the extreme height of the flood on the Severn was 16 ft., and at Worcester 17 ft. 1 in. above the average summer level. At Ross the flood on the Wye was 14 ft.; at Nottingham the rise of the water in the Trent was 12¼ ft.; at Rotherham the flood was 8 ft. 5 in.; and in north-east Yorkshire the Derwent rose to nearly 11 ft. above summer level. These floods caused great damage to property, and loss of life, bridges were washed away, railway traffic was suspended, and thousands of workmen were thrown idle. In several places the waterworks were flooded and the town's water supply was consequently cut off. Mr. Gaster drew attention to the complex character of pressure distribution during the time referred to, and showed how the region of maximum rainfall followed certain of the shallow depressions which appeared over the British Islands. He drew attention to the peculiarities of this type of depression, showing how in many, if not in most, cases the rainfall was heaviest in their rear, and was brought by the easterly, not by the westerly wind. He also referred to some

previous instances of heavy floods, in which similar atmospheric conditions prevailed, and explained how it was that as the disturbance passed off snow fell instead of rain, this in its turn being followed by severe cold, and in some places by frost.

3. "On atmospheric Pressure and its Effect on the Tidal Wave," by Captain W. N. Greenwood, F.R.Met.Soc. The object of this paper was to show how far a little knowledge of weather forecasting, with some practical knowledge of local weather changes, and a good barometer will go towards forming the right correction to be applied to the predicted height of the tide, and also to determine what that correction should be in its relation to the fluctuations of the barometer and the prevailing gradient.

4. "Meteorological Results at Levuka and Suva, 1875-1885, with Notes on the Climate of Fiji," by Mr. J. W. Vaughan, F.R.Met.Soc. The climate of Fiji is remarkably healthy. Diseases such as fevers of an aggravated and malarious character, cholera, and liver complaints are unknown.

DESTRUCTIVE WIND-STORM AT DEAL.

THE town of Deal, near which* about seven years ago a species of cyclone caused great damage, was again visited by a similar phenomenon on June 14th. During the whole of the morning the weather had been variable, with occasional heavy showers. There was very little wind, and just before the storm, shortly after mid-day, it was almost a calm, and oppressively hot. The first thing which was noticed as unusual was the peculiar appearance of the sky. A very long range of inky black clouds, of great density, stretched across the heavens, and advanced from a south-west direction. As if opposed to this, another similar bank, but shorter, advanced from the south. As these two sets of clouds approached each other some strange effects were witnessed. When within two miles of Deal they suddenly came to a standstill, and then changed their course and advanced together, crossing Deal from west to east. As soon as the ends of the clouds came together in the form of a fork the mass began twirling and dipping towards the earth in a spiral form. While it was perfectly calm and still at the time, in the south a terrific rushing sound, similar to the passing of an express train, could be heard proceeding from the clouds. At the same time the air became filled with straw and rubbish from stacks in the farmyards and such material as came in the path of the cyclone. As it passed over the town, causing great alarm, a large quantity of tiles was displaced where the wind caught the roofs of the houses, and on the beach it lifted many of the boats off the ground and carried them a considerable distance. Some of them were blown together two or three in a heap and damaged by the force of the collision, knocking out the greater portion of the gunwale of one of the craft. The wind-storm

* The Walmer Whirlwind, *Met. Mag.* Vol. xiii p. 145.

touched first the village of Sholden, near Deal, where it destroyed some vineries and nurseries. It caused great havoc to some farm buildings at middle Deal. Travelling eastwards across the South-Eastern Railway, the extraordinary force of the wind was manifested by its twisting a heavy iron crane, used for unloading railway trucks, round like a top. A tree was uprooted and blown into another garden. The storm lasted but a very short time, not more than ten minutes, and terminated in the Downs, where it had a curious effect on the water, but fortunately did not strike any shipping.

HEAT AND DRYNESS OF JULY 4TH.

To the Editor of the Meteorological Magazine.

SIR,—Last year I sent you the records of two very dry days —July 26th and August 17th—on which the difference of dry and wet bulbs reached 18°·9 and 17°·7. I now send that of one still drier, July 4th, 1886, the difference of dry and wet bulb reaching 22°·1.

I cannot say at what hour the excessive dryness began, as the readings at 9 a.m. not giving anything remarkable, I did not visit the screen again till my usual time at noon. The two following days were tolerably dry, the differences between the thermometers reaching respectively 16°·3 and 15°·9.

We have had only 0·44 in. rain since the 31st of May, and since the 19th of June only 0·02 in. (on the 22nd of June), and so are beginning to feel the want of it.—I remain, yours very truly,

R. H. BARNES.

Heatherlands, Parkstone, Dorset, 8th July, 1886.

4TH JULY, 1886.	Dry Bulb.	Wet Bulb.	Dew Point.	Relative Humidity.	Wind.		Cloud.	
					Direction.	Force.		
	°	°	°					
9 a.m.	75·5	66·6	60·2	59	N.N.W.	1	1	
Noon	84·4	64·0	50·6	31	N.N.W.	1 to 2	0	
1 p.m.	84·2	65·0	52·4	34	...	...	...	
1.30 p.m...	84·7	64·0	50·4	31	N.	1 to 2	0	
2.5 ,, ...	85·2	63·1	48·7	28	...	...	...	
2.30 ,, ...	85·9	63·9	49·6	29	...	..	...	
3.0 ,, ...	85·6	64·2	50·2	30	N.N.W.	2	0	
3.30 ,, ...	83·8	62·9	49·1	30	...	...	...	
4.0 ,, ...	83·5	63·6	50·4	32	...	...	...	
6·0 ,, ...	78·6	59·9	47·0	33	N.N.W.	2	0	
7·0 ,, ...	74·4	60·2	49·9	42	...	...	...	
8.0 ,, ...	69·1	58·1	49·5	50	...	...	...	
9.0 ,, ...	65·9	57·7	51·0	59	N.N.W.	1	0	
11.0 ,, ...	61·0	56·3	52·2	73	N.N.W.	1 to 2	0	Slight dew.

Max. in screen...	86°·1
Max. in sun, black bulb	126 ·4
,, ,, bright bulb	97 ·2

WHIRLWIND IN SOUTH-WEST LEICESTERSHIRE.

A SINGULAR phenomenon was witnessed in the neighbourhood of Croft and Whetstone during the progress of the storm on Tuesday evening, June 1st. Mr. Pochin, of Croft, states that while standing in his garden he noticed, coming apparently from the direction of Broughton Astley, a small black cloud, in shape like a corkscrew. It drifted towards Cosby and Whetstone, and during its progress another cloud, which resembled smoke, rose from the earth, carrying with it into the air a number of dark objects. The birds, which were caught in what proved to be a whirlwind, were thrown about like shuttlecocks, and the other objects seemed to be twirled about in all directions. On going over the ground on Wednesday morning, Mr. Pochin found that 40 or 50 trees had been either uprooted or stripped of their branches, which were scattered in all directions. One large ash was torn up and carried a distance of 18 feet, and an oak was uplifted and thrown a similar distance, whilst in a small field near Littlethorpe 10 trees were torn up by the roots. At Blaby, two massive trees on the Littlethorpe Road were thrown to the ground and dismantled, portions of the branches being carried for miles in the air.

REVIEW.

Serviciulŭ Meteorologicŭ in Europa. Note de călĕtorid de Inginerŭ ST. C. HEPITES. 4to, 164 pages. Tipografia Academici Romane, Bucuresci, 1884.

Istoricul Studilor Meteorologice in Romania, de ST. C. HEPITES. 8vo, 72 pages. F. Goble Fii, Bucuresci, 1886.

Observatiuni Meteorologice facute la Bucuresci in anul 1885, de ST C. HEPITES. Large 8vo, 124 pages. F. Goble Fii, Bucuresci, 1886.

TAKEN together, these three books give a fair idea of the state of meteorological work in Roumania, and we congratulate Director Hepites on his very business-like commencement.

The first-named work contains a full account of the meteorological organizations as ascertained by Dr. Hepites on a tour which, under the direction of the Roumanian Minister of Agriculture,* he made a few years since. The establishments visited and described were :—

England (Meteor. Office)	Holland (Utrecht)	France (Bureau Central)
,, (Kew)	Germany (Hamburg)	,, (Parc St. Maur)
Hungary (Budapest)	,, (Berlin)	,, (Montsouris)
Italy (Rome)	,, (Madgeburg)	Austria (Vienna)
Denmark (Copenhagen)	Switzerland (Zurich)	
Belgium (Brussels)	,, (Bern)	

The information thus obtained was of course invaluable as a guide to the formation of "The Meteorological Institute of Roumania," which is now in operation under Director Hepites.

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*Roumania *has* a minister for Agriculture, England has not yet reached that state of advancement!

The second work is also excellent as a preliminary to the work of the Institute. It comprises two parts, the first consisting chiefly of notices of, and reprints from, memoirs on meteorological observations made in Roumania (the first systematic record seems to be one for 1839-40 at Iasi [? Yassy, Lat. 47° 7′ N., Lon. 27° 28′ E.]), and the second part being a list, classified under the names of the authors, of books and memoirs upon the subject.

The third work contains the observations made daily at 8 a.m., 2 p.m., and 8 p.m. during 1885 at Bucuresci (Bucharest), printed *in extenso*. As it contains no summary for the year, we infer that it is merely a series of monthly reports stitched together, and that we shall ere long receive a complete yearly summary. Director Hepites has started well, and we wish him every success.

WEATHER FORECASTS AND SUN SPOTS.

Dr. Lonie, of St. Andrews, has lately drawn attention to some of the leading facts connected with the science of "weather forecasts" and with the theory of circular storms. He states that a strict examination of the records of the weather at Greenwich Observatory has conclusively proved that predictions based on the moon's changes are delusive. But in the matter of sun-spots the case is different. There is a remarkable concurrence of scientific opinion that the 11¼ years' cycle of their recurrences leads to increased solar radiation, of which we have our share in the form of increased evaporation and rainfall, and consequent development of cyclonic and magnetic storms. Such a law, if once established, would prove to be an important means of weather-forecasting over long periods, and, looking backwards over the more remarkable weather events of the century, he finds two witnesses equally for its truth and its value. It has been remarked that a mild winter in Europe often corresponds to a severe one in Asia and America, and that a mild winter in America corresponds to a severe one in Europe. The years 1816-17 were marked in the history of Europe by a general famine and distress. The wet was such that the harvests failed entirely. But the south-west wind which blew without cessation over the western part of the Continent, and which drenched it in its vapours, did not extend beyond Poland, and from the south of Russia came corn to support famished Europe. Again, many persons can remember the increased impulse given to the commerce between Europe and America by the drought of 1846, which damaged the corn crops in Europe, while America had an abundant harvest. Such facts forcibly illustrate the important part played in the life of nations by variations in atmospheric currents, and the examples adduced correspond with the periods of maximum sun-spots and minimum sun-spots compiled for the century by Dr. Wolf. According to Dr. Lonie we are again approaching just such another period of maximum sun-spots as happened in the year 1846.—*Engineering.*

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, DEC., 1885.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Absolute. Maximum. Date.	Absolute. Minimum. Temp.	Absolute. Minimum. Date.	Average. Max.	Average. Min.	Average. Dew Point.	Average. Humidity.	Absolute. Max. in Sun.	Absolute. Min. on Grass.	Total Rain. Depth.	Total Rain. Days.	Aver. Cloud.
	°		°		°	°	°	0–100	°	°	inches		0-10
England, London	50·8	4	22·3	11	44·0	33·8	35·3	87	72·2	15·4	1·05	11	6·2
Malta	69·1	9	40·6	14	60·5	51·0	47·0	77	118·7	34·8	2·35	12	5·2
Cape of Good Hope	..	...	...	...	...	...	...	...	...	...	...	...	...
Mauritius	84·2	9	69·0	31	82·2	73·6	69·4	78	139·5	58·3	5·16	20	7·2
Calcutta	80·6	18	50·2	27	75·3	57·8	57·4	76	139·7	41·0	·89	3	2·6
Bombay	88·3	26	65·0	3	83·4	69·5	64·2	67	142·0	53·1	·00	0	1·7
Ceylon, Colombo	90·8	2	72·0	26*a*	86·9	73·7	72·0	75	149·0	62·0	6·30	15	6·7
Melbourne	95·1	8	47·4	1	75·7	56·3	54·6	69	153·1	41·1	1·53	6	6·4
Adelaide	107·4	31	49·4	2	86·9	60·8	49·2	42	173·6	39·2	·46	5	3·7
Wellington	71·0	13*b*	43·3	6	66·4	52·5	54·9	86	145·0	40·0	1·01	6	4·7
Auckland	76·5	26	50·5	7	70·2	57·0	53·0	69	148·0	40·0	·55	7	7·1
Jamaica, Kingston	90·5	16	58·2	29	85·2	70·1	68·8	79	...	...	11·23	...	4·8
Barbados	82·0	2*c*	69·0	10	81·0	72·0	71·0	80	142·0	...	1·97	13	5·0
Toronto	43·6	9	—5·1	7	33·7	21·2	24·7	81	...	—10·5	1·98	16	8·4
New Brunswick, Fredericton	53·8	10	—8·2	18	30·8	10·2	19·4	85	...	...	4·13	15	6·4
Manitoba, Winnipeg	37·0	26	—25·3	6	17·6	—3·0	10·3	93	...	...	1·22	13	5·5
British Columbia, Victoria	57·0	2	24·0	31	47·6	38·0	...	...	...	...	2·47	13	...

(*a*) And 29. (*b*) And 20. (*c*) And 5, 28.

REMARKS, DECEMBER, 1885.

MALTA.—Mean temp. 54°·9; mean hourly velocity of wind 11·5 miles; sea temp. fell from 66° to 61°. TS on 15th; H on 11th and 15th. J. SCOLES.

Mauritius.—Rainfall ·17 in. below, and mean temp 0°·1 above, average; mean hourly velocity of wind 12·2 miles, extremes 28·1 miles on 23rd, and 1·6 miles on 26th; prevailing direction E.S.E. to E. L on 12th and T on 22nd. A cyclone passed E. of Mauritius from the 10th to 14th, and another N. and W. of Mauritius from the 18th to 24th. C. MELDRUM, F.R.S.

COLOMBO.—L on 1st, 3rd and 27th; T on 30th and 31st.
F. H. CLARKE, Lt.-Col. R.A.

Melbourne.—Mean temp. of air 2°·2 and of dew point 4°·4, mean humidity 5, mean amount of cloud 0·8, and mean pressure ·148 in. above their respective averages; rainfall ·86 in. below average. Prevailing winds S. and S.W., strong on nine days. T on 8th, 20th, and 22nd; L on 12th, 15th, 19th and 22nd; lunar halo on 21st.
R. L. J. ELLERY, F.R.S.

Adelaide.—Mean temp. 3°, and mean pressure ·077 in. above average; rainfall about half the average. W. E. COOKE.

Wellington.—Fine bright weather prevailed during this month, with very little rainfall in the early part, ·67 in. on the 7th being the max. for the month; from the 8th to the end it was excessively dry, and at times very warm; prevailing wind N.W., strong on five days, otherwise generally light. Pressure ·100 in. above, mean temp, (59°·4) 1°·6, and rainfall 3·07 in. below their averages. Earthquakes on 13th and 26th. R. B. GORE.

Auckland.—An unusually dry hot month, rainfall the lowest ever recorded for December. F. F. CHEESEMAN.

BARBADOS.—Mean temp. (76°·5) (1°·5) above, and rainfall 181 per cent. below, their averages; pressure very unsteady; mean hourly velocity of wind 12·2 miles, 25 per cent. above the average, extremes 17·1 miles and 4·5 miles.
R. BOWIE WALCOTT.

SUPPLEMENTARY TABLE OF RAINFALL, JUNE, 1886.

[For the Counties, Latitudes, and Longitudes of most of these Stations, see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger	·68	XI.	Castle Malgwyn	1·23
,,	Margate, Birchington...	·35	,,	Rhayader, Nantgwillt..	1·55
,,	Littlehampton	·63	,,	Carno, Tybrith	2·07
,,	Hailsham	·96	,,	Corwen, Rhug	2·13
,,	I. of W., St. Lawrence.	...	,,	Port Madoc	2·32
,,	Alton, Ashdell.....	·73	,,	I. of Man, Douglas	1·30
III.	Winslow, Addington ...	·98	XII.	Stoneykirk, Ardwell Ho.	1·30
,,	Oxford, Magdalen Col...	1·14	,,	Melrose, Abbey Gate ..	1·22
,,	Northampton	·88	XIII.	N. Esk Res. [Penicuick]	1·45
,,	Cambridge, Beech Ho...	·35	XIV.	Ballantrae, Glendrishaig	·95
,,	Wisbech, Bank House..	·70	,,	Glasgow, Queen's Park.	1·04
IV.	Southend	·27	XV.	Islay, Gruinart School..	1·45
,,	Harlow, Sheering	·35	XVI.	St. Andrews, Pilmour Cot	1·26
,,	Rendlesham Hall	·21	,,	Balquhidder, Stronvar..	2·03
,,	Diss	·36	,,	Dunkeld, Inver Braan..	1·13
,,	Swaffham	1·40	,,	Dalnaspidal H.R.S. ...	2·05
V.	Salisbury, Alderbury...	·87	XVII.	Keith H.R.S.	1·70
,,	Warminster	1·23	,,	Forres H.R.S.	1·05
,,	Calne, Compton Bassett	·68	XVIII.	Strome Ferry H.R.S....	3·42
,,	Ashburton, Holne Vic..	1·07	,,	Tain, Springfield.....	·64
,,	Holsworthy, Clawton...	1·24	,,	Loch Shiel, Glenaladale	5·67
,,	Hatherleigh, Winsford.	1·26	,,	S. Uist. Ardkenneth ...	1·94
,,	Lynmouth, Glenthorne.	·91	,,	Invergarry	2·00
,,	Probus, Lamellyn	1·16	XIX.	Lairg H.R.S.	1·01
,,	Wincanton, Stowell Rec.	·57	,,	Forsinard H.R.S.	2·38
,,	Taunton, Lydeard Ho...	·74	,,	Watten H.R.S.	1·10
,,	Wells, Westbury.....	·74	XX.	Dunmanway, Coolkelure	1·38
VI.	Bristol, Clifton	1·02	,,	Fermoy, Gas Works ...	·68
,,	Ross	1·71	,,	Tralee, Castlemorris ...	1·10
,,	Wem, Sansaw Hall.....	...	,,	Tipperary, Henry Street	1·53
,,	Cheadle, The Heath Ho.	1·39	,,	Newcastle West	·92
,,	Worcester, Diglis Lock	1·20	,,	Miltown Malbay.....	2·10
,,	Coventry, Coundon	·85	XXI.	Gorey, Courtown House	1·18
VII.	Melton, Coston	1·36	,,	Navan, Balrath	1·60
,,	Ketton Hall [Stamford]	·77	,,	Mullingar, Belvedere ...	1·55
,,	Horncastle, Bucknall ...	·69	,,	Athlone, Twyford	1·40
,,	Mansfield, St. John's St.	1·05	XXII.	Galway, Queen's Col....	1·38
VIII.	Macclesfield, The Park.	1·64	,,	Clifden, Kylemore	1·96
,,	Walton-on-the-Hill.....	1·10	,,	Crossmolina, Enniscoe..	1·37
,,	Lancaster, South Road.	2 01	,,	Collooney, Markree Obs.	2·12
,,	Broughton-in-Furness ..	2·34	,,	Carrick-on-Shannon ...	1·62
IX.	Wakefield, Stanley Vic.	·78	XXIII.	Rockcorry.....	1·76
,,	Ripon, Mickley	·79	,,	Warrenpoint	1·10
,,	Scarborough.....	·78	,,	Newtownards	1·14
,,	East Layton [Darlington]	1·20	,,	Belfast, New Barnsley .	1·44
,,	Middleton, Mickleton ..	1·57	,,	Cushendun	1·90
X.	Haltwhistle, Unthank..	2·37	,,	Bushmills	2·23
,,	Shap, Copy Hill	1·63	,,	Stewartstown	1·67
XI.	Llanfrechfa Grange	·64	,,	Buncrana	2·69
,,	Llandovery	1·90			

JUNE, 1886.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1870–9	Greatest Fall in 24 hours. Dpth	Date.	Days on which ·01 or more fell.	TEMPERATURE. Max Deg.	Max Date	Min Deg.	Min Date	No. of Nights below 32°. In shade.	On grass.
			inches	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	·63	— 2·04	·25	10	8	80·2	29	40·2	5	0	0
II.		Maidstone (Hunton Court)...	·26	— 1·81	·11	2	3	...	...	...	...	...	...
,,		Strathfield Turgiss	·60	— 1·50	·16	10*a*	11	79·7	29	37·7	5	0	1
III.		Hitchin	·94	— 1·19	·40	2	10	74·0	28	36·0	4	0	...
,,		Banbury	1·00	— 1·44	·36	2	10	78·0	29	42·0	4, 5	0	...
IV.		Bury St. Edmunds (Culford)	·77	— 1·50	·22	13	9	86·0	29	32·0	3	1	...
,,		Norwich (Cossey)	·50	— 1·72	·14	13	9	75·0	29	35·5	6	0	...
V.		Weymouth(LangtonHerring)	·71	...	·49	1	5	75·0	30	46·0	5	0	...
,,		Barnstaple.....	·83	— 1·89	·26	9	7	80·0	30	48·0	28	0	...
,,		Bodmin	1·12	— 2·09	·57	9	8	75·0	29*b*	47·0	7, 8	0	...
VI.		Stroud (Upfield)	·64	— 1·74	·25	1	9	82·0	28	47·0	20	0	...
,,		ChurchStretton(Woolstaston)	1·84	— 1·03	·60	9	13	74·0	28	43·0	3	0	0
,,		Tenbury (Orleton)	1·03	— 1·71	·50	1	12	80·3	29	39·0	21	0	0
VII.		Leicester	1·50	...	·89	1	10	78·6	29	38·2	4	0	4
,,		Boston	1·15	— 1·10	·87	1	5	87·0	...	42·0	...	...	...
,,		Grimsby (Killingholme).....	...	...	...	...	...	...	...	...	...	...	...
,,		Hesley Hall [Tickhill].....	·85	...	·34	1	6	78·0	29	37·0	4	0	...
VIII.		Manchester (Ardwick).....	1·65	— 1·51	·77	1	7	74·0	29	45·0	1, 3	0	...
IX.		Wetherby (Ribston Hall) ..	1·01	— 1·86	·61	2	3	...	...	...	...	...	...
,,		Skipton (Arncliffe)	2·40	— 1·42	·92	14	11	75·0	30	37·0	26	0	...
X.		North Shields	1·18	— ·85	·91	1	8	73·0	28	35·0	4	0	0
,,		Borrowdale (Seathwaite).....	4·70	— 3·11	1·73	14	11	75·5	30	39·5	3	0	...
XI.	WALES.	Cardiff (Ely).....	·75	— 2·31	·21	14	8	...	...	...	...	...	...
,,		Haverfordwest	1·66	— 1·37	·52	9	9	77·0	29	41·0	27	0	...
,,		Plinlimmon (Cwmsymlog) ...	2·10	...	·62	22	7	...	...	...	...	...	...
,,		Llandudno.....	1·21	— ·79	·66	1	8	70·1	30	...	...	...	...
XII.	SCOTLAND.	Cargen [Dumfries]	·52	— 2·65	·19	11	5	79·2	19	36·2	3	0	...
,,		Jedburgh (Sunnyside).....	1·98	— ·42	·92	1	9	72·0	28*b*	31·0	3	1	...
XIV.		Douglas Castle (Newmains)	...	...	...	...	...	...	...	...	..	...	...
XV.		Lochgilphead (Kilmory)	2·00	— 1·84	·44	11	11	...	...	36·0	3	0	...
,,		Oban (Craigvarren)	1·52	...	·49	14	12	71·6	19	36·8	1	0	...
,,		Mull (Quinish).....	2·01	...	·51	14	17	...	...	...	...	...	...
XVI.		Loch Leven Sluices	1·10	— 1·67	·40	2	4	...	...	...	...	...	...
,,		Arbroath	1·14	— 1·47	·58	1	7	73·0	28	37·0	3	0	...
XVII.		Braemar	1·06	— 1·80	·30	15	12	72·0	30	30·0	3	1	3
,,		Aberdeen	1·01	...	·35	1	11	70·0	29	35·0	3	0	...
XVIII		Lochbroom	3·46	...	1·04	15	18	...	...	...	...	...	...
,,		Culloden	·71	— 1·54	...	...	...	71·0	30	35·0	3	0	3
XIX.		Dunrobin	1·91	...	·34	22	12	66·0	20	41·0	23	0	...
,,		Kirkwall (Swanbister)..... ..	2·21	...	·69	14	19	63·0	14	34·2	3	0	...
XX.	IRELAND.	Cork (Blackrock)	1·07	— 2·48	·34	9	8	82·0	29*b*	45·0	9	0	...
,,		Dromore Castle	1·87	...	·30	14	12	78·0	14	40·0	2	0	...
,,		Waterford (Brook Lodge) ...	·55	...	·13	2	8	76·5	29	45·0	24	0	0
,,		Killaloe	2·35	...	·64	8	16	80·0	30	40·0	1	0	—
XXI.		Carlow (Browne's Hill)	·81	— 1·85	·46	9	10	...	...	...	...	...	...
,,		Dublin (FitzWilliam Square)	1·29	— ·91	·54	2	15	71·7	28	46·3	27	0	0
XXII.		Ballinasloe	1·30	— 1·89	·53	9	12	74·0	30	41·0	1	0	...
XXIII		Waringstown	1·42	— 1·24	·22	11	11	85·0	30	37·0	2	0	...
,,		Londonderry (Creggan Res.).	3·14	...	·90	8	16	...	...	...	...	...	...
,,		Omagh (Edenfel)	1·60	— 1·45	·85	8	13	75·0	30	38·0	26	0	...

a And 12 *b* And 30.

+ Shows that the fall was above the average; —that it was below it.

METEOROLOGICAL NOTES ON JUNE, 1886.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail S for Snow.

ENGLAND.

STRATHFIELD TURGISS.—The weather at first was very ungenial, and towards the middle of the month there was considerable R; the month ended with beautiful summer haymaking weather. TS on 19th. Wild rose in flower on 9th. Foxglove and honeysuckle on 22nd.

BANBURY.—Mean temp. (56°·4) 1°·8 below the average; high wind on 23rd.

CULFORD.—A very dry, hot month, and vegetation suffered much from want of R.

LANGTON HERRING.—A bright sunny month. Of the total R ·49 in. fell in one hour, from 9.10 a.m. to 10.10 a.m. on the 1st, and on the evening of that day there was a fog, which brought much blight on the apple trees. Mean temp. (60°·2) very nearly the average. Very fine weather prevailed in the latter part of the month, which was most favourable for securing the hay crop, which was heavy. Severe TS on 19th, solar halos on 5th and 17th, fog on three days.

BODMIN.—A singularly dry month; mean temp. 61°·8.

STROUD.—T on 1st, TS on 19th.

WOOLSTASTON.—A fine month for the hay harvest; mean temp. 56°·1.

ORLETON.—Much R fell on 1st and 2nd, with distant T, but the fall of R after, although frequent, was slight. The temp. from 1st to 23rd, was generally low and steady, but there were many bright days till the 9th, after which it was stormy and cold. The last week was fine and warm, with many brilliant days. Mean temp. about 1°·5 below the average of 25 years. Prevailing winds between N.E. and N.W., and frequently strong. Distant T on 5 days. All crops very backward.

ARDWICK.—Taken on the whole, June was fairly warm, but not hot, and fine and dry.

WALES.

HAVERFORDWEST.—A month of fine growing weather with gentle R and genial temperature, and at times windy; prevailing direction of wind W.N.W., and N.E. and E. during the last week with warm summer weather; excellent hay crops.

LLANDUDNO.—No storm or other very exceptional atmospheric phenomenon occurred. Mean temp. (55°·6) 2°·4 below average. There were a few warm days from 8th to 15th, but generally the weather was cold to the 23rd, when the max. temp. reached 60°·5; from that date the temp. gradually rose and culminated on the last day of the month in a max. of 70°·1; the total range (23°·9) was about 9°, and the mean daily range (11°·1) 3°·1 below the average. As regards R, the month did not sustain its proverbial character of a dripping June, but, on the contrary, was characterized by extreme dryness, nevertheless the crops suffered no detriment, the ground having been so thoroughly saturated by the excessive R of the previous month. The hay crop, as under these circumstances we had reason to expect, was a very heavy one, and much of it was secured in splendid condition before the close. Wheat and other cereals, though late, were promising in appearance and making rapid progress. Potatoes and green crops were also promising. The air throughout the month was singularly dry, and, though polar winds were prevalent, there was a large amount of bright sunshine (over 150 hours) to take the edge off their keenness. The public health was in all respects exceptionally good.

SCOTLAND.

CARGEN.—An unusually dry month. Mean temp. (54°·8) 1°·8 below the average. Great and sudden changes of temp. occurred, the range on the 19th

being no less than 36°·4. On two or three days about the middle of the month a strong parching wind from N.W. prevailed, doing much damage to the foliage, in many exposed situations making the trees as brown as in autumn. T and L on 9th and 10th.

JEDBURGH.—The weather of the month was generally cold and ungenial; the amount of sunshine was less than usual, and the night temp. was low. Cereals were backward and much in need of R at the close; turnip crops were well got in, and the hay got a good start with the R of the early part of the month, and looked well at the close. T on 9th.

OBAN, CRAIGVARREN.—The month was very cold for June, and there were great extremes of temp. H on 11th, 23rd and 24th. Half a gale on 12th and 24th.

QUINISH.—A cold ungenial month; vegetation very backward.

BRAEMAR.—A fine month with luxuriant growth.

ABERDEEN.—The weather of the month was fine on the whole; strong breezes prevailed from 15th to 21st, light variable winds both before and after these dates.

LOCHBROOM.—From the 10th, when a severe TS occurred, to the close there was very little sunshine, and not a day of summer warmth; the month as a whole was very cold, and occasionally stormy, hence everything at the close was weeks later than in an ordinary good summer.

CULLODEN.—An exceedingly dry month; R very partial.

IRELAND.

CORK.—Showery, between some fine days till the 11th, remainder of the month very fine and the last three days hot. Mean temp. 58°·7, 1°·5 below the average.

DROMORE.—A very fine month, the weather of the early part especially being very good for green crops, &c.

KILLALOE.—A lovely month with sufficient R and fine summer heat in the last fortnight; temp. in shade reached 79° on several days, and touched 80° on the 30th, with 57° as min. on the same date.

DUBLIN.—A month of average temp., N.W. winds and frequent, but scanty R. Cool squally winds blew on several days from points between W. and N.N.W.; at first these fresh winds were accompanied by showers, but after the 14th, only ·15 in. of R was registered on 4 days. The amount of cloud was usually large, but the last few days were characterised by brilliant weather and intensely hot sunshine. The mean temp. was very nearly the average, though the evenings were notably cold during the greater part of the month. The air was more or less foggy on 4th and 11th. High winds prevailed on six days, but there was no gale. Mean humidity 79; mean amount of cloud 6·3; prevailing winds N.W., W., and E.

OMAGH, EDENFEL.—The weather of the month was fresh, with deficient R and low temp. until the 29th, when a hot period set in.

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REGULAR TABLE.

Loch Leven Sluices, January *should be* 2·60. Arbroath, March *should be* 2·11.

SUPPLEMENTARY TABLE.

Dorking, Abinger, April *should be* 1·36. Wem, Sansaw Hall, Aug. *should be* 2·11.
,, ,, Aug. ,, ,, ·87. Wakefield, Stanley Vic., Oct. ,, 4·15.
,, ,, Sept. ,, ,, 5·47. Islay, Gruinart School, Dec. ,, 3·84.
Oct. ,, ,, 4·31.